09/856,543

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=> s hydrogen electrode? and nucleic acid hybridi?
   4 FILES SEARCHED...
L10           7 HYDROGEN ELECTRODE? AND NUCLEIC ACID HYBRIDI?

=> d l10 bib abs 1-7

L10  ANSWER 1 OF 7  WPIDS  COPYRIGHT 2004 THOMSON DERWENT on STN
AN   2000-482839 [42]   WPIDS
CR   1999-372624 [32]
DNC  C2000-145333
TI   Modified nucleic acid oligomer used for electrical detection of
     hybridization, has covalently bonded to it redox-active units containing
     electron-donor and -acceptor molecules.
DC   B04 D16
IN   HARTWICH, G
PA   (HART-I) HARTWICH G; (FRIZ-N) FRIZ BIOCHEM GMBH; (FRIZ-N) RIZ BIOCHEM CO
     LTD
CYC  88
PI   WO 2000042217 A2 20000720 (200042)* DE   76p
        RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL
            OA PT SD SE SL SZ TZ UG ZW
         W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DK EE ES FI GB GD
            GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV
            MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT
            UA UG US UZ VN YU ZA ZW
     DE 19926457   A1 20000727 (200042)
     AU 2000026627 A  20000801 (200054)
     NO 2001003471 A  20010913 (200163)
     EP 1144685    A2 20011017 (200169)  DE
         R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT
            RO SE SI
     BR 2000007571 A  20011127 (200203)
     CZ 2001002503 A3 20020116 (200215)
     KR 2001101477 A  20011114 (200230)
     ZA 2001005097 A  20020424 (200237)#      99p
     HU 2001005170 A2 20020528 (200249)
     CN 1352697    A  20020605 (200261)
     AU 758063     B  20030313 (200328)
     EP 1144685    B1 20030423 (200329)  DE
         R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT
            RO SE SI
     DE 50001859   G  20030528 (200336)
     JP 2003521465 W  20030715 (200347)       93p
     MX 2001007183 A1 20020601 (200365)
ADT  WO 2000042217 A2 WO 2000-EP84 20000107; DE 19926457 A1 DE 1999-19926457
     19990429; AU 2000026627 A AU 2000-26627 20000107; NO 2001003471 A WO
     2000-EP84 20000107, NO 2001-3471 20010713; EP 1144685 A2 EP 2000-904884
     20000107, WO 2000-EP84 20000107; BR 2000007571 A BR 2000-7571 20000107, WO
     2000-EP84 20000107; CZ 2001002503 A3 WO 2000-EP84 20000107, CZ 2001-2503
     20000107; KR 2001101477 A KR 2001-708801 20010712; ZA 2001005097 A ZA
     2001-5097 20010621; HU 2001005170 A2 WO 2000-EP84 20000107, HU 2001-5170
     20000107; CN 1352697 A CN 2000-803149 20000107; AU 758063 B AU 2000-26627
     20000107; EP 1144685 B1 EP 2000-904884 20000107, WO 2000-EP84 20000107; DE
     50001859 G DE 2000-501859 20000107, EP 2000-904884 20000107, WO 2000-EP84
     20000107; JP 2003521465 W JP 2000-593774 20000107, WO 2000-EP84 20000107;
     MX 2001007183 A1 WO 2000-EP84 20000107, MX 2001-7183 20010713
FDT  AU 2000026627 A Based on WO 2000042217; EP 1144685 A2 Based on WO
     2000042217; BR 2000007571 A Based on WO 2000042217; CZ 2001002503 A3 Based
     on WO 2000042217; HU 2001005170 A2 Based on WO 2000042217; AU 758063 B
     Previous Publ. AU 2000026627, Based on WO 2000042217; EP 1144685 B1 Based
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on WO 2000042217; DE 50001859 G Based on EP 1144685, Based on WO 2000042217; JP 2003521465 W Based on WO 2000042217; MX 2001007183 A1 Based on WO 2000042217
PRAI DE 1999-19926457 19990429; DE 1999-19901761 19990118; ZA 2001-5097 20010621
AN 2000-482839 [42] WPIDS
CR 1999-372624 [32]
AB WO 200042217 A UPAB: 20031009
NOVELTY - Nucleic acid oligomer (A) is modified by covalent bonding to it of a redox-active unit (I) comprising one or more each of electron-donor (ED) molecules (II) and electron-acceptor (EA) molecules (III).
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:
(1) a method for producing (A);
(2) a conductive surface (B) modified by attachment of one or more types of (A);
(3) a method for producing (B); and
(4) a method for electrochemical detection of oligomer hybridization by incubating (B) with nucleic acid oligomer and detecting subsequent electrical communication between (I) and the conducting surface.
USE - Electrically conductive surfaces modified with (A) are used for sequence-specific detection of **nucleic acid hybridization**, e.g. for clinical diagnosis, toxicological testing or generally in research and development, e.g. for nucleic acid sequencing.
ADVANTAGE - Electrical detection of hybridization is simple and inexpensive and makes possible development of a battery-operated system for on site analysis. It eliminates the need for gel electrophoresis and the associated use of radioisotopes or mutagenic dyes.
DESCRIPTION OF DRAWING(S) - Diagram of gold surface derivatized with an oligonucleotide that has been modified by attachment of ubiquinone (electron acceptor; UQ) at the 5'-end. When induced, electrons will pass from the reaction center (RC, e.g. from the photosynthetic bacterium Rhodobacter sphaeroides) to UQ and from there to the gold surface, but only if the oligonucleotide is hybridized to its complement. When in unhybridized form, the oligonucleotide has electrical conductivity too low to transport electrons to the gold surface.
Dwg.4/6

L10 ANSWER 2 OF 7 USPATFULL on STN
AN 2003:330143 USPATFULL
TI Nucleic acid reactions using labels with different redox potentials
IN Yu, Changjun, Pasadena, CA, UNITED STATES
Tor, Yitzhak, San Diego, CA, UNITED STATES
PI US 2003232354 A1 20031218
AI US 2003-336225 A1 20030102 (10)
RLI Continuation of Ser. No. US 2002-116726, filed on 3 Apr 2002, ABANDONED
Continuation of Ser. No. US 2000-626096, filed on 26 Jul 2000, PENDING
PRAI US 2001-281276P 20010403 (60)
DT Utility
FS APPLICATION
LREP DORSEY & WHITNEY LLP, INTELLECTUAL PROPERTY DEPARTMENT, 4 EMBARCADERO CENTER, SUITE 3400, SAN FRANCISCO, CA, 94111
CLMN Number of Claims: 25
ECL Exemplary Claim: 1
DRWN 40 Drawing Page(s)
LN.CNT 3998
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention is directed to methods and compositions for the use of electron transfer moieties with different redox potentials to electronically detect nucleic acids, particularly for the electrochemical sequencing of DNA.

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CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L10 ANSWER 3 OF 7 USPATFULL on STN
AN 2003:219700 USPATFULL
TI Compositions and methods for detecting redox-active molecules in solution
IN Creager, Stephen E., Central, SC, UNITED STATES
French, Marla, Derwood, MD, UNITED STATES
Radford, Philip T., Roebuck, SC, UNITED STATES
PI US 2003152990 A1 20030814
AI US 2003-368820 A1 20030219 (10)
RLI Continuation of Ser. No. US 2001-805549, filed on 13 Mar 2001, ABANDONED
PRAI US 2000-192211P 20000327 (60)
DT Utility
FS APPLICATION
LREP DORITY & MANNING, P.A., POST OFFICE BOX 1449, GREENVILLE, SC, 29602-1449
CLMN Number of Claims: 21
ECL Exemplary Claim: 1
DRWN 10 Drawing Page(s)
LN.CNT 587
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB An electrochemical amplification scheme for detecting very small amounts of redox-active molecules is disclosed. The reaction involves "recycling" of oxidized analyte molecules by way of a solution-phase electron exchange reaction with a sacrificial electron donor. The scheme relies heavily upon the action of a selective monolayer coating on the electrode that suppresses direct oxidation of the sacrificial donor but facilitates the oxidation of analyte molecules. The method is particularly useful for detection of hydroxymethylferrocene at a dodecanethiolate-coated gold electrode with ferrocyanide as the sacrificial electron donor.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L10 ANSWER 4 OF 7 USPATFULL on STN
AN 2003:207198 USPATFULL
TI Nucleic acid reactions using labels with different redox potentials
IN Blackburn, Gary, Glendora, CA, UNITED STATES
Kayyem, Jon Faiz, Pasadena, CA, UNITED STATES
Tao, Chunlin, Beverly Hills, CA, UNITED STATES
Yu, Changjun, Pasadena, CA, UNITED STATES
PI US 2003143556 A1 20030731
AI US 2002-137710 A1 20020430 (10)
RLI Continuation-in-part of Ser. No. US 2002-116726, filed on 3 Apr 2002, ABANDONED
PRAI US 2001-281276P 20010403 (60)
DT Utility
FS APPLICATION
LREP DORSEY & WHITNEY LLP, INTELLECTUAL PROPERTY DEPARTMENT, 4 EMBARCADERO CENTER, SUITE 3400, SAN FRANCISCO, CA, 94111
CLMN Number of Claims: 25
ECL Exemplary Claim: 1
DRWN 44 Drawing Page(s)
LN.CNT 3898
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention is directed to methods and compositions for the use of electron transfer moieties with different redox potentials to electronically detect nucleic acids, particularly for the electrochemical sequencing of DNA.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L10 ANSWER 5 OF 7 USPATFULL on STN
AN 2002:60910 USPATFULL
TI Compositions and methods for detecting redox-active molecules in solution
IN Creager, Stephen E., Central, SC, UNITED STATES
PI US 2002034744 A1 20020321
AI US 2001-805549 A1 20010313 (9)
PRAI US 2000-192211P 20000327 (60)
DT Utility
FS APPLICATION
LREP John E. Vick, Jr., Dority & Manning, Attorneys at Law, P.A., P.O. Box 1449, Greenville, SC, 29602
CLMN Number of Claims: 21
ECL Exemplary Claim: 1
DRWN 6 Drawing Page(s)
LN.CNT 587
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB An electrochemical amplification scheme for detecting very small amounts of redox-active molecules is disclosed. The reaction involves "recycling" of oxidized analyte molecules by way of a solution-phase electron exchange reaction with a sacrificial electron donor. The scheme relies heavily upon the action of a selective monolayer coating on the electrode that suppresses direct oxidation of the sacrificial donor but facilitates the oxidation of analyte molecules. The method is particularly useful for detection of hydroxymethylferrocene at a dodecanethiolate-coated gold electrode with ferrocyanide as the sacrificial electron donor.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L10 ANSWER 6 OF 7 USPATFULL on STN
AN 2001:157679 USPATFULL
TI Systems for electrophoretic transport and detection of analytes
IN Kayyem, Jon Faiz, Pasadena, CA, United States
Blackburn, Gary, Glendora, CA, United States
O'Connor, Stephen D., Pasadena, CA, United States
PA Clinical Micro Sensors, Inc., Pasadena, CA, United States (U.S. corporation)
PI US 6290839 B1 20010918
AI US 1998-134058 19980814 (9)
PRAI US 1998-90389P 19980623 (60)
DT Utility
FS GRANTED
EXNAM Primary Examiner: Tung, T.; Assistant Examiner: Noguerola, Alex
LREP Flehr Hohbach Test Albritton & Herbert LLP, Trecartin, Esq., Richard F., Silva, Esq., Robin M.
CLMN Number of Claims: 28
ECL Exemplary Claim: 1
DRWN 44 Drawing Figure(s); 21 Drawing Page(s)
LN.CNT 4594
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention relates to compositions and methods useful in the electrophoretic transport of target analytes to a detection electrode comprising a self-assembled monolayer (SAM). Detection proceeds through the use of an electron transfer moiety (ETM) that is associated with the target analyte, either directly or indirectly, to allow electronic detection of the ETM.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L10 ANSWER 7 OF 7 USPATFULL on STN

09567863

AN 2001:116434 USPATFULL
TI Binding acceleration techniques for the detection of analytes
IN Blackburn, Gary, Glendora, CA, United States
Creager, Stephen E., Central, SC, United States
Fraser, Scott, La Canada, CA, United States
Irvine, Bruce D., Glendora, CA, United States
Meade, Thomas J., Altadena, CA, United States
O'Connor, Stephen D., Pasadena, CA, United States
Terbrueggen, Robert H., Manhattan Beach, CA, United States
Vielmetter, Jost G., Pasadena, CA, United States
Welch, Thomas W., Pasadena, CA, United States
PA Clinical Micro Sensors, Inc., Pasadena, CA, United States (U.S. corporation)
PI US 6264825 B1 20010724
AI US 1999-338726 19990623 (9)
RLI Continuation of Ser. No. US 1998-134058, filed on 14 Aug 1998
PRAI US 1998-90389P 19980623 (60)
DT Utility
FS GRANTED
EXNAM Primary Examiner: Tung, T.; Assistant Examiner: Noguerola, Alex
LREP Flehr Hohabch Test Albritton & Herbert LLP, Trecartin, Esq., Richard F., Silva, Esq., Robin M.
CLMN Number of Claims: 29
ECL Exemplary Claim: 1
DRWN 49 Drawing Figure(s); 22 Drawing Page(s)
LN.CNT 5644
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention relates to compositions and methods useful in the acceleration of binding of target analytes to capture ligands on surfaces. Detection proceeds through the use of an electron transfer moiety (ETM) that is associated with the target analyte, either directly or indirectly, to allow electronic detection of the ETM.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

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[redacted]

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=> d his

     (FILE 'HOME' ENTERED AT 15:12:57 ON 20 FEB 2004)

     FILE 'BIOSIS, MEDLINE, CAPLUS, WPIDS, USPATFULL' ENTERED AT 15:13:19 ON
     20 FEB 2004
L1         18774 S CONDUCTIVE SURFACE?
L2            16 S L1 AND NUCLEIC ACID? (7A) REDOX
L3            11 S L2 AND POTENTIAL
L4             1 S L3 AND HYDROGEN ELECTRODE
L5             5 S L2 NOT L3

=> s l1 and hydrogen electrode
L6            40 L1 AND HYDROGEN ELECTRODE

=> s l2 and nucleic acid?
   3 FILES SEARCHED...
L7            16 L2 AND NUCLEIC ACID?

=> s l7 not l5
L8            11 L7 NOT L5

=> dup rem l8
PROCESSING COMPLETED FOR L8
L9            11 DUP REM L8 (0 DUPLICATES REMOVED)

=> d l9 bib abs 1-11

L9   ANSWER 1 OF 11  USPATFULL on STN
AN     2004:24676  USPATFULL
TI     Compositions selective for adenosine diphosphate and methods of using
       same
IN     Diener, John L., Cambridge, MA, UNITED STATES
       Srinivasan, Jayaram, Murrysville, PA, UNITED STATES
       Hamaguchi, Nobuko, Framingham, MA, UNITED STATES
       Blanchard, Jill, Arlington, MA, UNITED STATES
       Kurz, Jeffrey, Somerville, MA, UNITED STATES
       Kurz, Markus, Newton, MA, UNITED STATES
       Cload, Sharon T., Cambridge, MA, UNITED STATES
       Epstein, David, Belmont, MA, UNITED STATES
       Wilson, Charles, Concord, MA, UNITED STATES
       Stanton, Martin, Stow, MA, UNITED STATES
PI     US 2004018515      A1   20040129
AI     US 2003-406027     A1   20030402 (10)
PRAI   US 2002-369680P     20020403 (60)
       US 2002-370196P     20020405 (60)
       US 2003-437949P     20030103 (60)
DT     Utility
FS     APPLICATION
LREP   MINTZ, LEVIN, COHN, FERRIS, GLOVSKY, AND POPEO, P.C., ONE FINANCIAL
       CENTER, BOSTON, MA, 02111
CLMN   Number of Claims: 100
ECL    Exemplary Claim: 1
DRWN   80 Drawing Page(s)
LN.CNT 5765
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB     Compositions which recognize and report on the concentration selectively
       adenosine diphosphate (ADP) and methods of making and using them are
       provided. The invention further relates to methods of using the
       compositions to monitor function of biological agents. Reagents and
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systems for performing the methods are also provided. The methods of the invention are useful in diagnostic applications and drug optimization.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L9 ANSWER 2 OF 11 USPATFULL on STN
AN 2004:16354 USPATFULL
TI Method and apparatus for manipulating polarizable analytes via dielectrophoresis
IN Zenhausern, Frederic, Fountain Hills, AZ, UNITED STATES
Chou, Chia-Fu, Chandler, AZ, UNITED STATES
Terbrueggen, Robert Henry, Manhattan Beach, CA, UNITED STATES
PI US 2004011650 A1 20040122
AI US 2002-201613 A1 20020722 (10)
DT Utility
FS APPLICATION
LREP DORSEY & WHITNEY LLP, Four Embarcadero Center-Suite 3400, San Francisco, CA, 94111-4187
CLMN Number of Claims: 16
ECL Exemplary Claim: 1
DRWN 3 Drawing Page(s)
LN.CNT 3262
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention is directed to devices and methods for manipulating polarizable analytes via dielectrophoresis to allow for improved detection of target analytes. Microfluidic devices are configured such that the application of a voltage between field-generating electrodes results in the generation of an asymmetric electric field within the device. Some embodiments of the invention provide a physical constriction, and electrically floating conductive material or a combination of the two techniques to generating an asymmetrical field. Using dielectrophoresis, target analytes are concentrated or separated from contaminant analytes and transported to a detection module.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L9 ANSWER 3 OF 11 USPATFULL on STN
AN 2003:324628 USPATFULL
TI Compositions selective for caffeine or aspartame and methods of using same
IN Cload, Sharon T., Cambridge, MA, UNITED STATES
Ferguson, Alicia, Somerville, MA, UNITED STATES
PI US 2003228603 A1 20031211
AI US 2003-406903 A1 20030403 (10)
PRAI US 2002-370266P 20020405 (60)
US 2002-398858P 20020725 (60)
DT Utility
FS APPLICATION
LREP MINTZ, LEVIN, COHN, FERRIS, GLOVSKY, AND POPEO, P.C., ONE FINANCIAL CENTER, BOSTON, MA, 02111
CLMN Number of Claims: 48
ECL Exemplary Claim: 1
DRWN 48 Drawing Page(s)
LN.CNT 4998
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Compositions which recognize and report on the concentration of caffeine or aspartame target molecules. The invention further relates to methods of using the compositions to monitor the presence or concentration of such targets in a variety of samples, including those samples to be ingested, such as beverages, e.g., coffee or soft drinks.

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CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L9 ANSWER 4 OF 11 USPATFULL on STN
AN 2003:298226 USPATFULL
TI Methods and compositions relating to electrical detection of **nucleic acid** reactions
IN Choong, Vi-En, Chandler, AZ, UNITED STATES
Gallagher, Sean R., Claremont, CA, UNITED STATES
Gaskin, Mike, Chandler, AZ, UNITED STATES
Li, Changming, Phoeniz, AZ, UNITED STATES
Maracas, George, Phoenix, AZ, UNITED STATES
Shi, Song, Phoenix, AZ, UNITED STATES
PI US 2003209432 A1 20031113
AI US 2003-149319 A1 20030228 (10)
WO 2000-US33497 20001211
DT Utility
FS APPLICATION
LREP Robin M Silva, Dorsey & Whitney, Intellectual Property Department, Four Embarcadero Center Suite 3400, San Francisco, CA, 94111-4187
CLMN Number of Claims: 7
ECL Exemplary Claim: 1
DRWN 10 Drawing Page(s)
LN.CNT 2619
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB This invention relates to the detection of molecular interactions between biological molecules. Specifically, the invention relates to electrical detection of interactions such as hybridization between **nucleic acids** or peptide antigen-antibody interaction using arrays of peptides or oligonucleotides. In particular, the invention relates to an apparatus and methods for detecting **nucleic acid** hybridization or peptide binding using electronic methods including AC impedance. In some embodiments, no electrochemical or other label moieties are used. In others, electrochemically active labels are used to detect reactions on hydrogel arrays, including genotyping reactions such as the single base extension reaction.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L9 ANSWER 5 OF 11 USPATFULL on STN
AN 2002:99079 USPATFULL
TI REPORTERLESS GENOSENSORS USING ELECTRICAL DETECTION METHODS
IN LI, CHANGMING, PHOENIX, AZ, UNITED STATES
SHI, SONG, PHOENIX, AZ, UNITED STATES
MARACAS, GEORGE, PHOENIX, AZ, UNITED STATES
CHOONG, VI-EN, CHANDLER, AZ, UNITED STATES
PI US 2002051975 A1 20020502
AI US 1999-458533 A1 19991209 (9)
DT Utility
FS APPLICATION
LREP ROBIN M. SILVA, ESQ., FLEHR HOHBACH TEST ALBRITTON AND HERBERT, LLP, FOUR EMBARCADERO CENTER, SUITE 3400, SAN FRANCISCO, CA, 94111
CLMN Number of Claims: 35
ECL Exemplary Claim: 1
DRWN 14 Drawing Page(s)
LN.CNT 1044
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention provides an apparatus and methods for detecting cation interactions associated with molecular interactions using AC impedance, but without the use of electrochemical or other reporters to obtain measurable signals. The methods can be used for electrical detection of molecular interactions between probe molecules bound to

defined regions of an array and target molecules which are permitted to interact with the probe molecules.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L9 ANSWER 6 OF 11 USPATFULL on STN
AN 2002:27117 USPATFULL
TI Molecular wire injection sensors
IN Keen, Randy E., San Diego, CA, UNITED STATES
PA KeenSense, Inc. (U.S. corporation)
PI US 2002015963 A1 20020207
AI US 2001-960165 A1 20010920 (9)
RLI Continuation-in-part of Ser. No. US 1999-365109, filed on 30 Jul 1999, PENDING
DT Utility
FS APPLICATION
LREP BEYER WEAVER & THOMAS LLP, P.O. BOX 778, BERKELEY, CA, 94704-0778
CLMN Number of Claims: 21
ECL Exemplary Claim: 1
DRWN 7 Drawing Page(s)
LN.CNT 2729
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Disclosed is a sensor for sensing the presence of an analyte component without relying on redox mediators. This sensor includes (a) a plurality of conductive polymer strands each having at least a first end and a second end and each aligned in a substantially common orientation; (b) a plurality of molecular recognition headgroups having an affinity for the analyte component and being attached to the first ends of the conductive polymer strands; and (c) an electrode substrate attached to the conductive polymer strands at the second ends. The electrode substrate is capable of reporting to an electronic circuit reception of mobile charge carriers (electrons or holes) from the conductive polymer strands. The electrode substrate may be a photovoltaic diode.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L9 ANSWER 7 OF 11 USPATFULL on STN
AN 2002:275932 USPATFULL
TI Doped conducting polymers applications and methods
IN Wang, Joseph, Las Cruces, NM, United States
Jiang, Mian, Las Cruces, NM, United States
Mukherjee, Baidehi, Binghamton, NY, United States
Fortes, Antonio, Minneapolis, MN, United States
PA New Mexico State University Technology Transfer Corporation, Las Cruces, NM, United States (U.S. corporation)
PI US 6468785 B1 20021022
AI US 2000-507387 20000218 (9)
PRAI US 1999-120778P 19990219 (60)
US 1999-131786P 19990430 (60)
DT Utility
FS GRANTED
EXNAM Primary Examiner: Whisenant, Ethan C.; Assistant Examiner: Lu, Frank
LREP Slusher, Stephen A., Ownbey, Nancy E.
CLMN Number of Claims: 24
ECL Exemplary Claim: 1
DRWN 16 Drawing Figure(s); 11 Drawing Page(s)
LN.CNT 1418
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB An apparatus for electrochemical detection of DNA hybridization utilizing oligonucleotide-containing polymer-coated electrodes, and an apparatus for electrochemical detection of **nucleic acids** in flowing streams using doped polymer-coated electrodes.

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Also provided are methods for detection of DNA hybridization and for detection of **nucleic acids** in flowing streams.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L9 ANSWER 8 OF 11 USPATFULL on STN
AN 2001:220900 USPATFULL
TI Molecular wire injection sensors
IN Keen, Randy E., San Diego, CA, United States
PA KeenSense, Inc., San Diego, CA, United States (U.S. corporation)
PI US 6326215 B1 20011204
AI US 1999-365109 19990730 (9)
RLI Division of Ser. No. US 1997-856822, filed on 14 May 1997, now patented, Pat. No. US 6060327
DT Utility
FS GRANTED
EXNAM Primary Examiner: Chin, Christopher L.
LREP Beyer Weaver & Thomas LLP
CLMN Number of Claims: 27
ECL Exemplary Claim: 1
DRWN 7 Drawing Figure(s); 6 Drawing Page(s)
LN.CNT 3114
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Disclosed is a sensor for sensing the presence of an analyte component without relying on redox mediators. This sensor includes (a) a plurality of conductive polymer strands each having at least a first end and a second end and each aligned in a substantially common orientation; (b) a plurality of molecular recognition headgroups having an affinity for the analyte component and being attached to the first ends of the conductive polymer strands; and (c) an electrode substrate attached to the conductive polymer strands at the second ends. The electrode substrate is capable of reporting to an electronic circuit reception of mobile charge carriers (electrons or holes) from the conductive polymer strands. The electrode substrate may be a photovoltaic diode. Also disclosed is method of forming a sensor capable of sensing the presence of an analyte component. This method includes (a) contacting a sensor substrate (e.g., a device element of a device on semiconductor chip) with a first medium containing mobile conductive polymer strands or precursors of the conductive polymer strands; (b) applying a first potential to the substrate sufficient to form a first structure having the conductive polymer strands affixed into the substrate; (c) contacting the sensor substrate, with affixed conductive polymer strands, with a second medium containing mobile molecular recognition headgroups; and (d) applying a second potential to the substrate sufficient to affix the molecular recognition headgroups to the affixed conductive polymer strands.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L9 ANSWER 9 OF 11 WPIDS COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2000-411931 [35] WPIDS
DNC C2000-124823
TI Modified **nucleic acid** oligomer, useful for sequencing by hybridization, is substituted by redox agent to allow electrical detection of hybridization.
DC B04 C07 D16 L02 L03
IN HARTWICH, G; HELLER, A
PA (HART-I) HARTWICH G; (FRIZ-N) FRIZ BIOCHEM GMBH
CYC 88
PI WO 2000031101 A1 20000602 (200035)* DE 49p
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW

W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DK EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZA ZW

DE 19921940 A1 20000615 (200035)
AU 2000013836 A 20000613 (200043)
DE 19964220 A1 20010419 (200123)
EP 1133514 A1 20010919 (200155) DE
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI
BR 9915526 A 20011113 (200201)
KR 2001080973 A 20010825 (200215)
CN 1324365 A 20011128 (200219)
MX 2001003985 A1 20010601 (200235)
AU 751220 B 20020808 (200263)
JP 2002532386 W 20021002 (200279) 69p
DE 19921940 C2 20030206 (200312)
DE 19964220 C2 20030703 (200345)
ZA 2001003180 A 20030625 (200348) 64p
RU 2213095 C2 20030927 (200371)

ADT WO 2000031101 A1 WO 1999-EP8888 19991119; DE 19921940 A1 DE 1999-19921940 19990429; AU 2000013836 A AU 2000-13836 19991119; DE 19964220 A1 Div ex DE 1999-19921940 19990429, DE 1999-19964220 19990429; EP 1133514 A1 EP 1999-972637 19991119, WO 1999-EP8888 19991119; BR 9915526 A BR 1999-15526 19991119, WO 1999-EP8888 19991119; KR 2001080973 A KR 2001-705877 20010510; CN 1324365 A CN 1999-812448 19991119; MX 2001003985 A1 MX 2001-3985 20010420; AU 751220 B AU 2000-13836 19991119; JP 2002532386 W WO 1999-EP8888 19991119, JP 2000-583928 19991119; DE 19921940 C2 DE 1999-19921940 19990429; DE 19964220 C2 Div ex DE 1999-19921940 19990429, DE 1999-19964220 19990429; ZA 2001003180 A ZA 2001-3180 20010419; RU 2213095 C2 WO 1999-EP8888 19991119, RU 2001-114192 19991119

FDT AU 2000013836 A Based on WO 2000031101; DE 19964220 A1 Div ex DE 19921940; EP 1133514 A1 Based on WO 2000031101; BR 9915526 A Based on WO 2000031101; AU 751220 B Previous Publ. AU 2000013836, Based on WO 2000031101; JP 2002532386 W Based on WO 2000031101; DE 19921940 C2 Div in DE 19964220; DE 19964220 C2 Div ex DE 19921940; RU 2213095 C2 Based on WO 2000031101

PRAI DE 1999-19921940 19990429; DE 1998-19853957 19981123

AN 2000-411931 [35] WPIDS

AB WO 200031101 A UPAB: 20000725

NOVELTY - **Nucleic acid** oligomer (I) modified by a **redox**-active substance (II) that is oxidizable and reducible selectively at a potential (phi) of 2 to -2 V, relative to the standard hydrogen electrode, is new.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(a) a method for producing (I);

(b) a modified **conductive surface** that has one or more types of (I) bound to it;

(c) a method for producing surfaces of (b); and

(d) a method for electrochemical detection of **nucleic acid** oligomer hybridization events, using the surface of (b).

USE - (I) is useful for DNA or RNA sequencing, e.g. in clinical diagnosis, toxicological testing, for research and development in genetics, agriculture and pharmaceuticals.

ADVANTAGE - (I) permits electrical detection of a hybridization signal (eliminating the need for fluorophores, radioisotopes etc.), resulting in a simple and inexpensive method for sequence determination. It also opens up the possibility of developing a battery-operated sequencer for use in the field.

Dwg.0/5

L9 ANSWER 10 OF 11 USPATFULL on STN

09567863

AN 2000:57621 USPATFULL
TI Molecular wire injection sensors
IN Keen, Randy E., San Diego, CA, United States
PA Keensense, Inc., San Diego, CA, United States (U.S. corporation)
PI US 6060327 20000509
AI US 1997-856822 19970514 (8)
DT Utility
FS Granted
EXNAM Primary Examiner: Chin, Christopher L.
LREP Beyer & Weaver, LLP
CLMN Number of Claims: 36
ECL Exemplary Claim: 1
DRWN 7 Drawing Figure(s); 6 Drawing Page(s)
LN.CNT 2968
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Disclosed is a sensor for sensing the presence of an analyte component without relying on redox mediators. This sensor includes (a) a plurality of conductive polymer strands each having at least a first end and a second end and each aligned in a substantially common orientation; (b) a plurality of molecular recognition headgroups having an affinity for the analyte component and being attached to the first ends of the conductive polymer strands; and (c) an electrode substrate attached to the conductive polymer strands at the second ends. The electrode substrate is capable of reporting to an electronic circuit reception of mobile charge carriers (electrons or holes) from the conductive polymer strands. The electrode substrate may be a photovoltaic diode.

Also disclosed is method of forming a sensor capable of sensing the presence of an analyte component. This method includes (a) contacting a sensor substrate (e.g., a device element of a device on semiconductor chip) with a first medium containing mobile conductive polymer strands or precursors of the conductive polymer strands; (b) applying a first potential to the substrate sufficient to form a first structure having the conductive polymer strands affixed to the substrate; (c) contacting the sensor substrate, with affixed conductive polymer strands, with a second medium containing mobile molecular recognition headgroups; and (d) applying a second potential to the substrate sufficient to affix the molecular recognition headgroups to the affixed conductive polymer strands.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L9 ANSWER 11 OF 11 USPATFULL on STN
AN 1999:128361 USPATFULL
TI Polymer-electrodes for detecting **nucleic acid** hybridization and method of use thereof
IN Thorp, H. Holden, Chapel Hill, NC, United States
Loomis, Carson R., Durham, NC, United States
Napier, Mary E., Carrboro, NC, United States
PA The University of North Carolina at Chapel Hill, Chapel Hill, NC, United States (U.S. corporation)
~~Xanthon, Inc., Research~~ Triangle Park, NC, United States (U.S. corporation)
PI US 5968745 19991019
AI US 1997-950503 19971014 (8)
RLI ~~Continuation-in-part~~ of Ser. No. US 1996-667338, filed on 20 Jun 1996, now patented, Pat. No. US 5871918, issued on 16 Feb 1999 which is a continuation-in-part of Ser. No. US 1995-495817, filed on 27 Jun 1995, now abandoned
DT Utility
FS Granted
EXNAM Primary Examiner: Campbell, Eggerton A.

09567863

LREP Myers Bigel Sibley & Sajovec
CLMN Number of Claims: 33
ECL Exemplary Claim: 1
DRWN 8 Drawing Figure(s); 5 Drawing Page(s)
LN.CNT 1490
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A polymer-electrode including (a) a substrate having a conductive working surface; and (b) a polymer layer on the conductive working surface. The polymer layer has a plurality of microfluidic reaction openings distributed throughout the layer. An oligonucleotide probe can be attached to the polymer layer and is available to capture target **nucleic acid**. A soluble mediator can diffuse freely and transfer electrons from the preselected base in the hybridized **nucleic acid** to the conductive working surface of the substrate. An electronic signal generated from the electron transfer reaction is detected and quantitated.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

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09/886,543.

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 * * * * * * * * * * * * * * STN  Columbus  * * * * * * * * * * * * * * *

FILE 'HOME' ENTERED AT 15:12:57 ON 20 FEB 2004

=> file biosis medline caplus wpids uspatfull
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                                                           ENTRY    SESSION
FULL ESTIMATED COST                                         0.21       0.21

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FILE 'CAPLUS' ENTERED AT 15:13:19 ON 20 FEB 2004
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FILE 'WPIDS' ENTERED AT 15:13:19 ON 20 FEB 2004
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FILE 'USPATFULL' ENTERED AT 15:13:19 ON 20 FEB 2004
CA INDEXING COPYRIGHT (C) 2004 AMERICAN CHEMICAL SOCIETY (ACS)

*** YOU HAVE NEW MAIL ***

=> s conductive surface?
L1        18774 CONDUCTIVE SURFACE?

=> s l1 and nucleic acid? (7a) redox
   3 FILES SEARCHED...
L2           16 L1 AND NUCLEIC ACID? (7A) REDOX

=> s l2 and potential
L3           11 L2 AND POTENTIAL

=> s l3 and hydrogen electrode
L4            1 L3 AND HYDROGEN ELECTRODE

=> d l4 bib abs

L4   ANSWER 1 OF 1  WPIDS  COPYRIGHT 2004 THOMSON DERWENT on STN
AN   2000-411931 [35]   WPIDS
DNC  C2000-124823
TI   Modified nucleic acid oligomer, useful for sequencing by hybridization, is
     substituted by redox agent to allow electrical detection of hybridization.
DC   B04 C07 D16 L02 L03
IN   HARTWICH, G; HELLER, A
PA   (HART-I) HARTWICH G; (FRIZ-N) FRIZ BIOCHEM GMBH
CYC  88
PI   WO 2000031101 A1 20000602 (200035)* DE   49p
        RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL
            OA PT SD SE SL SZ TZ UG ZW
         W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DK EE ES FI GB GD
            GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV
            MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT
            UA UG US UZ VN YU ZA ZW
     DE 19921940   A1 20000615 (200035)
     AU 2000013836 A  20000613 (200043)
     DE 19964220   A1 20010419 (200123)
     EP 1133514    A1 20010919 (200155)  DE
```

R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI

BR 9915526	A	20011113	(200201)	
KR 2001080973	A	20010825	(200215)	
CN 1324365	A	20011128	(200219)	
MX 2001003985	A1	20010601	(200235)	
AU 751220	B	20020808	(200263)	
JP 2002532386	W	20021002	(200279)	69p
DE 19921940	C2	20030206	(200312)	
DE 19964220	C2	20030703	(200345)	
ZA 2001003180	A	20030625	(200348)	64p
RU 2213095	C2	20030927	(200371)	

ADT WO 2000031101 A1 WO 1999-EP8888 19991119; DE 19921940 A1 DE 1999-19921940 19990429; AU 2000013836 A AU 2000-13836 19991119; DE 19964220 A1 Div ex DE 1999-19921940 19990429, DE 1999-19964220 19990429; EP 1133514 A1 EP 1999-972637 19991119, WO 1999-EP8888 19991119; BR 9915526 A BR 1999-15526 19991119, WO 1999-EP8888 19991119; KR 2001080973 A KR 2001-705877 20010510; CN 1324365 A CN 1999-812448 19991119; MX 2001003985 A1 MX 2001-3985 20010420; AU 751220 B AU 2000-13836 19991119; JP 2002532386 W WO 1999-EP8888 19991119, JP 2000-583928 19991119; DE 19921940 C2 DE 1999-19921940 19990429; DE 19964220 C2 Div ex DE 1999-19921940 19990429, DE 1999-19964220 19990429; ZA 2001003180 A ZA 2001-3180 20010419; RU 2213095 C2 WO 1999-EP8888 19991119, RU 2001-114192 19991119

FDT AU 2000013836 A Based on WO 2000031101; DE 19964220 A1 Div ex DE 19921940; EP 1133514 A1 Based on WO 2000031101; BR 9915526 A Based on WO 2000031101; AU 751220 B Previous Publ. AU 2000013836, Based on WO 2000031101; JP 2002532386 W Based on WO 2000031101; DE 19921940 C2 Div in DE 19964220; DE 19964220 C2 Div ex DE 19921940; RU 2213095 C2 Based on WO 2000031101

PRAI DE 1999-19921940 19990429; DE 1998-19853957 19981123

AN 2000-411931 [35] WPIDS

AB WO 200031101 A UPAB: 20000725

NOVELTY - **Nucleic acid** oligomer (I) modified by a **redox**-active substance (II) that is oxidizable and reducible selectively at a **potential** (phi) of 2 to -2 V, relative to the standard **hydrogen electrode**, is new.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(a) a method for producing (I);

(b) a modified **conductive surface** that has one or more types of (I) bound to it;

(c) a method for producing surfaces of (b); and

(d) a method for electrochemical detection of nucleic acid oligomer hybridization events, using the surface of (b).

USE - (I) is useful for DNA or RNA sequencing, e.g. in clinical diagnosis, toxicological testing, for research and development in genetics, agriculture and pharmaceuticals.

ADVANTAGE - (I) permits electrical detection of a hybridization signal (eliminating the need for fluorophores, radioisotopes etc.), resulting in a simple and inexpensive method for sequence determination. It also opens up the possibility of developing a battery-operated sequencer for use in the field.

Dwg.0/5

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=> s l2 not l3
L5             5 L2 NOT L3

=> d l5 bib abs 1-5

L5   ANSWER 1 OF 5  CAPLUS  COPYRIGHT 2004 ACS on STN
AN   2001:657546  CAPLUS
DN   135:222330
```

09567863

TI Thermostable, photoinducible **redox**-active unit for electrochemical detection of **nucleic acid** hybridization
IN Hartwich, Gerhard; Bandilla, Michael
PA Friz Biochem G.m.b.H., Germany
SO Ger. Offen., 16 pp.
CODEN: GWXXBX
DT Patent
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 10049527	A1	20010906	DE 2000-10049527	20001006
	WO 2002029092	A2	20020411	WO 2001-DE3812	20011002
	WO 2002029092	A3	20021205		

W: US
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR

PRAI DE 2000-10049527 A 20001006
AB An oligonucleotide which is conjugated to a thermostable, photoinducible redox-active unit is disclosed. This modified oligonucleotide can be used in a procedure for electrochem. detection of sequence-specific oligonucleotide hybridization. The modified oligonucleotide is attached by one end to a **conductive surface** and carries on the other one end the thermostable, photoinducible redox-active unit. Hybridization of the target oligonucleotide to the modified, immobilized oligonucleotide alters the elec. communication between the **conductive surface** and the thermostable, photoinducible redox-active unit. Detection of hybridization is made possible by electrochem. procedures such as voltammetry, amperometry or conductivity measurement. Thus, the photosynthetic reaction centers of Chloroflexus aurantiacus and Chromatium tepidum were isolated and their quinone cofactors removed. A gold electrode-immobilized oligonucleotide conjugated to a quinone derivative was complexed with the photosynthetic reaction center to prepare the thermostable, photoinducible redox-active unit. The C. aurantiacus system was stable up to 60° while the C. tepidum system was stable to 50°.
RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 2 OF 5 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2001:228904 CAPLUS
DN 134:247934
TI Electrochemical detection of **nucleic acid** hybridization using probe conjugates with **redox** catalysts bound to electrode surfaces
IN Hartwich, Gerhard
PA Friz Biochem G.m.b.H., Germany
SO PCT Int. Appl., 71 pp.
CODEN: PIXXD2
DT Patent
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001021635	A2	20010329	WO 2000-DE3016	20000901
	WO 2001021635	A3	20010517		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU,

ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
DE 19945398 A1 20010405 DE 1999-19945398 19990922
EP 1228081 A1 20020807 EP 2000-972570 20000901
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL
PRAI DE 1999-19945398 A 19990922
WO 2000-DE3016 W 20000901

AB The present invention relates to a method for electrochem. detecting sequence-specific nucleic acid-oligomer hybridization events. Nucleic acid or PNA probes which are bound to a **conductive surface** at one end and are linked to a redox catalyst moiety at the remaining, free end serve as a hybridization matrix. A proportion of the single strand oligonucleotides are hybridized by means of a treatment with the oligonucleotide solution (target) that is to be examined The elec. communication between the **conductive surface** and the redox catalyst, which is initially non- or barely existent, is increased by hybridization. A hybridization event can thus be detected using electrochem. methods such as voltammetry, amperometry, potentiometry or conductivity measurement.

L5 ANSWER 3 OF 5 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1999:427507 CAPLUS
DN 131:69262
TI Method for electrochemical detection of sequence-specific nucleic acid-oligomer hybridization
IN Hartwich, Gerhard
PA Germany
SO Ger. Offen., 28 pp.
CODEN: GWXXBX
DT Patent
LA German
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 19901761	A1	19990701	DE 1999-19901761	19990118
	DE 19926457	A1	20000727	DE 1999-19926457	19990429
	WO 2000042217	A2	20000720	WO 2000-EP84	20000107
	W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	WO 2000042217	A3	20001130		
	EP 1144685	A2	20011017	EP 2000-904884	20000107
	EP 1144685	B1	20030423		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	BR 2000007571	A	20011127	BR 2000-7571	20000107
	AU 758063	B2	20030313	AU 2000-26627	20000107
	AT 238436	E	20030515	AT 2000-904884	20000107
	JP 2003521465	T2	20030715	JP 2000-593774	20000107
	ZA 2001005097	A	20020219	ZA 2001-5097	20010621
	NO 2001003471	A	20010913	NO 2001-3471	20010713
PRAI	DE 1999-19901761	A1	19990118		
	DE 1999-19926457	A	19990429		

WO 2000-EP84 W 20000107

AB The title method is disclosed. The method comprises use of a DNA/RNA/PNA oligomer, one end of which is attached to a **conductive surface**, the other end of which is attached to a photoinducible redox-active substance. Upon hybridization of this tethered oligomer derivative, the elec. communication between the redox-active substance and **conductive surface** is increased. This hybridization-enhanced elec. current can be detected by amperometry, voltammetry or conductivity measurements. Two types of oligonucleotide derivs. were described. The oligonucleotides were attached to a gold-coated mica surface. The other end of one of the oligonucleotides was attached to ubiquinone and this was complexed with the reaction center protein of Rhodobacter sphaeroides. The other oligonucleotide was conjugated to the quinone cofactor PQQ which was in turn conjugated to Zn-bacteriochlorophyll.

L5 ANSWER 4 OF 5 WPIDS COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2000-482839 [42] WPIDS
CR 1999-372624 [32]
DNC C2000-145333
TI Modified nucleic acid oligomer used for electrical detection of hybridization, has covalently bonded to it redox-active units containing electron-donor and -acceptor molecules.
DC B04 D16
IN HARTWICH, G
PA (HART-I) HARTWICH G; (FRIZ-N) FRIZ BIOCHEM GMBH; (FRIZ-N) RIZ BIOCHEM CO LTD
CYC 88
PI WO 2000042217 A2 20000720 (200042)* DE 76p
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DK EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZA ZW
DE 19926457 A1 20000727 (200042)
AU 2000026627 A 20000801 (200054)
NO 2001003471 A 20010913 (200163)
EP 1144685 A2 20011017 (200169) DE
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI
BR 2000007571 A 20011127 (200203)
CZ 2001002503 A3 20020116 (200215)
KR 2001101477 A 20011114 (200230)
ZA 2001005097 A 20020424 (200237)# 99p
HU 2001005170 A2 20020528 (200249)
CN 1352697 A 20020605 (200261)
AU 758063 B 20030313 (200328)
EP 1144685 B1 20030423 (200329) DE
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI
DE 50001859 G 20030528 (200336)
JP 2003521465 W 20030715 (200347) 93p
MX 2001007183 A1 20020601 (200365)
ADT WO 2000042217 A2 WO 2000-EP84 20000107; DE 19926457 A1 DE 1999-19926457 19990429; AU 2000026627 A AU 2000-26627 20000107; NO 2001003471 A WO 2000-EP84 20000107, NO 2001-3471 20010713; EP 1144685 A2 EP 2000-904884 20000107, WO 2000-EP84 20000107; BR 2000007571 A BR 2000-7571 20000107, WO 2000-EP84 20000107; CZ 2001002503 A3 WO 2000-EP84 20000107, CZ 2001-2503 20000107; KR 2001101477 A KR 2001-708801 20010712; ZA 2001005097 A ZA 2001-5097 20010621; HU 2001005170 A2 WO 2000-EP84 20000107, HU 2001-5170 20000107; CN 1352697 A CN 2000-803149 20000107; AU 758063 B AU 2000-26627

20000107; EP 1144685 B1 EP 2000-904884 20000107, WO 2000-EP84 20000107; DE 50001859 G DE 2000-501859 20000107, EP 2000-904884 20000107, WO 2000-EP84 20000107; JP 2003521465 W JP 2000-593774 20000107, WO 2000-EP84 20000107; MX 2001007183 A1 WO 2000-EP84 20000107, MX 2001-7183 20010713

FDT AU 2000026627 A Based on WO 2000042217; EP 1144685 A2 Based on WO 2000042217; BR 2000007571 A Based on WO 2000042217; CZ 2001002503 A3 Based on WO 2000042217; HU 2001005170 A2 Based on WO 2000042217; AU 758063 B Previous Publ. AU 2000026627, Based on WO 2000042217; EP 1144685 B1 Based on WO 2000042217; DE 50001859 G Based on EP 1144685, Based on WO 2000042217; JP 2003521465 W Based on WO 2000042217; MX 2001007183 A1 Based on WO 2000042217

PRAI DE 1999-19926457 19990429; DE 1999-19901761 19990118; ZA 2001-5097 20010621

AN 2000-482839 [42] WPIDS

CR 1999-372624 [32]

AB WO 200042217 A UPAB: 20031009

NOVELTY - Nucleic acid oligomer (A) is modified by covalent bonding to it of a redox-active unit (I) comprising one or more each of electron-donor (ED) molecules (II) and electron-acceptor (EA) molecules (III).

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) a method for producing (A);

(2) a **conductive surface** (B) modified by attachment of one or more types of (A);

(3) a method for producing (B); and

(4) a method for electrochemical detection of oligomer hybridization by incubating (B) with nucleic acid oligomer and detecting subsequent electrical communication between (I) and the conducting surface.

USE - Electrically **conductive surfaces** modified with (A) are used for sequence-specific detection of nucleic acid hybridization, e.g. for clinical diagnosis, toxicological testing or generally in research and development, e.g. for nucleic acid sequencing.

ADVANTAGE - Electrical detection of hybridization is simple and inexpensive and makes possible development of a battery-operated system for on site analysis. It eliminates the need for gel electrophoresis and the associated use of radioisotopes or mutagenic dyes.

DESCRIPTION OF DRAWING(S) - Diagram of gold surface derivatized with an oligonucleotide that has been modified by attachment of ubiquinone (electron acceptor; UQ) at the 5'-end. When induced, electrons will pass from the reaction center (RC, e.g. from the photosynthetic bacterium Rhodobacter sphaeroides) to UQ and from there to the gold surface, but only if the oligonucleotide is hybridized to its complement. When in unhybridized form, the oligonucleotide has electrical conductivity too low to transport electrons to the gold surface.

Dwg.4/6

L5 ANSWER 5 OF 5 WPIDS COPYRIGHT 2004 THOMSON DERWENT on STN

AN 1999-372624 [32] WPIDS

CR 2000-482839 [41]

DNN N1999-278010 DNC C1999-110177

TI Oligonucleotides tagged with photoinducible redox-active unit - for binding to **conductive surfaces** for electrochemical detection of hybridisation.

DC B04 D16 S03

IN HARTWICH, G

PA (HART-I) HARTWICH G

CYC 1

PI DE 19901761 A1 19990701 (199932)* 28p

ADT DE 19901761 A1 DE 1999-19901761 19990118

PRAI DE 1999-19901761 19990118

AN 1999-372624 [32] WPIDS

CR 2000-482839 [41]

09567863

AB DE 19901761 A UPAB: 20000905
A **nucleic acid** oligomer with a photoinducible **redox**-active unit comprising one or more electron donors and one or more electron acceptors covalently attached is new.

Also claimed is (1) a modified **conductive surface** comprising one or more modified nucleic acid oligomers as above bound to a **conductive surface**; and (2) a method for electrochemically detecting oligomer hybridisation, comprising contacting a modified **conductive surface** as above with nucleic acid oligomers.

USE - Probes comprising single-stranded DNA, RNA or PNA (peptide nucleic acid) oligomers linked at one end to a **conductive surface** and at the other end to a photoinducible redox-active unit can be used to detect hybridisation of a target oligonucleotides. This is possible because hybridisation increases the electrical communication between the **conductive surface** and the photoinducible redox-active unit. The probes may also be used for sequencing and detection of mismatched basepairs.

Dwg.0/6

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